

CLAIMS

1. A method of testing a tire comprising the steps of:  
taking tire-related measurements on a tire/wheel assembly, including the  
test tire, during multiple test runs;  
5 maintaining the pressure within the test tire at a desired test pressure  
throughout the multiple test runs with a pressure-controlling device mounted on  
the tire/wheel assembly; and  
compiling data from the multiple test runs to evaluate tire performance.
- 10 2. A method as set forth in claim 1, wherein said pressure-maintaining  
step comprises the step of releasing gas from the tire if the tire pressure exceeds  
the desired test pressure by 1/36 psi.
- 15 3. A method as set forth in claim 2, wherein said releasing step is  
performed when the tire/wheel assembly is at rest between test runs and  
wherein the pressure-controlling device includes a motion detector to determine  
whether the tire/wheel assembly is at rest.
- 20 4. A method as set forth in claim 1, wherein said pressure-maintaining  
step comprises the steps of:  
measuring actual tire pressure;  
comparing the measured tire pressure to the desired test pressure; and  
adjusting the tire pressure if the measured tire pressure is above or below  
the desired test pressure by at least 1/4 psi.
5. A method as set forth in claim 4, wherein said adjusting step  
comprises adjusting the tire pressure if the measured tire pressure is above or  
below the desired test pressure by at least 1/16 psi.

6. A method as set forth in claim 4, wherein said adjusting step comprises adjusting the tire pressure if the measured tire pressure is above or below the desired test pressure by at least 1/36 psi.

5 7. A method as set forth in claim 4, wherein said pressure-maintaining step comprises the step of setting the desired test pressure on the pressure-controlling device prior to the test runs.

8. A method as set forth in claim 4, wherein said adjusting step comprises opening a normally closed solenoid valve to bleed air from the tire when the measured tire pressure exceeds the desired test pressure.

10 9. A method as set forth in claim 4, wherein said adjusting step is performed when the vehicle is at rest between test runs.

15 10. A method as set forth in claim 1, wherein the wheel of the tire/wheel assembly has a rotating mounting surface on which the pressure-controlling device is mounted whereby the pressure-controlling device rotates with the tire/wheel assembly.

11. A method as set forth in claim 1, wherein said measurement-taking step comprises driving the vehicle so that the relevant tire rolls over a plate having instrumentation associated with the plate to measure tire properties.

20 12. A pressure-controlling device for taking test measurements of a tire being rotated during multiple test runs to evaluate dynamic tire performance, said device comprising:

a tube which is adapted to connect to a fluid inlet/outlet of the tire;  
a valve which can be opened to allow fluid to pass through the tube;  
25 a pressure sensor which measures the pressure of the tire; and

a controller which compares the measured pressure to a desired test pressure and opens the valve when the difference between the measured pressure and the desired test pressure exceeds 1/4 psi.

5           13.    A pressure-controlling device as set forth in claim 12, wherein the controller opens the valve to adjust the pressure if difference exceeds 1/8 psi.

14.    A pressure-controlling device as set forth in claim 12, wherein the controller opens the valve to adjust the pressure if the difference exceeds 1/16 psi.

10           15.    A pressure-controlling device as set forth in claim 12, wherein the controller opens the valve to adjust the pressure if the difference exceeds 1/32 psi.

15           16.    A pressure-controlling device as set forth in claim 12, wherein the controller opens the valve to adjust the pressure if the difference exceeds 1/36 psi.

17.    A pressure-controlling device as set forth in claim 12, wherein the valve is a normally-closed solenoid valve.

20           18.    A pressure-controlling device as set forth in claim 12, further comprising a gas source which can be opened to introduce gas through the connection tube and into the tire, the controller opening the valve to adjust the pressure if the measured pressure is less than the desired test pressure.

19.    A pressure-controlling device as set forth in claim 12, further comprising a pressure setter for setting the desired test pressure.

20. A pressure-controlling device as set forth in claim 12 further comprising a motion detector for detecting when the vehicle is at motion and wherein the controller adjusts the pressure when the motion detector indicates that the vehicle is at rest.

5 21. A pressure-controlling device as set forth in claim 12, further comprising a fluid source and a valve which can be opened to introduce fluid from the source through the connection tube and into the tire; and wherein the controller opens the valve to adjust the pressure if the measured pressure is less than the desired test pressure by at least 1/4 psi.

10 22. A method of testing a tire of a tire/wheel assembly rotated during multiple test runs to evaluate dynamic tire performance, said method comprising the steps of:

15 mounting the pressure-controlling device of claim 12 onto the tire/wheel assembly to maintain the pressure during multiple test runs;

taking test measurements while the tire/wheel assembly vehicle is rotated during the multiple test runs; and

compiling data from the multiple test runs to evaluate tire performance.

20 23. In combination, a vehicle and the pressure-controlling device of claim 12 mounted on the tire/wheel assembly of the vehicle.

24. The combination set forth in claim 23, wherein the pressure-controlling device rotates with the tire/wheel assembly when the vehicle is being driven.

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